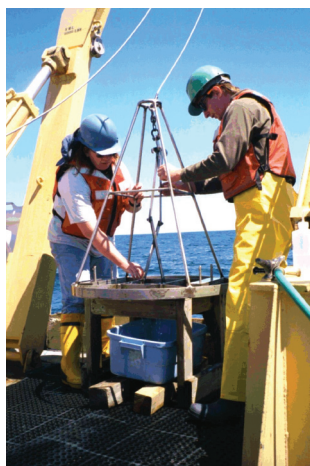


.....accomplishments.....(continued)

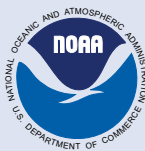
- ❑ Formation of international ties with UNESCO and participating countries to develop global indicators of stress in the marine benthos, with an initial focus on organic carbon content of sediments as an indicator of stress (Hyland et al. 2005).
- ❑ Completion of major surveys of ecological condition of coastal-ocean (shelf) waters along the U.S. western continental shelf, from Straits of Juan de Fuca, WA to Pt. Conception, CA (June 2003); the South Atlantic Bight (May 2004); and the Mid-Atlantic Bight (May 2006).
- ❑ Completion of an assessment of the impacts of three sequential hurricanes in fall 1999 (Dennis, Floyd and Irene) on sediment quality and condition of benthic fauna in the Neuse River estuary, North Carolina (Balthis et al. In press). In addition to assessing ecosystem responses to these extreme natural events, a companion baseline assessment also was completed prior to the hurricanes (Balthis et al. 2002).
- ❑ Completion of an integrative assessment of benthic fauna, sediment-associated stressors, and general habitat characteristics in the lower St. John's River, Florida (Cooksey et al. In review). This is the home of several EPA-designated



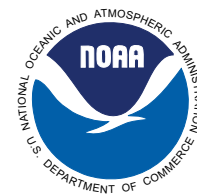
Superfund sites and one of only 14 systems in the U.S. designated as an American Heritage River.

- ❑ Completion of a pilot survey of deepsea coral and sponge communities at Olympic Coast National Marine Sanctuary (OCNMS) off the coast of Washington (Hyland et al. 2005). The study, conducted in partnership with OCNMS scientists, demonstrated the presence of target deepsea coral species in these waters, including the first known record of the stony reef-building coral *Lophelia pertusa* for this region, and provided further evidence of commercial fishing influences on the seafloor (bottom trawl marks in sediment, abandoned gear). Results are being used to help support management decision-making regarding the possible need for additional conservation measures in such critical habitats of the OCNMS.
- ❑ Development of an interactive, internet-based national data inventory of benthic invertebrate species from studies conducted by NCCOS and its partners, along with a corresponding reference collection of specimens, to help provide access to information on the biodiversity, abundance and distribution of these resources for use in related studies nationwide (see website at www.nbi.noaa.gov).

Coastal Ecology Program



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Date of Printing - June 2006



Coastal Ecology Program

Center for Coastal Environmental Health and Biomolecular Research



Mission. The Coastal Ecology program at CCEHBR provides expertise in marine ecology, with a special emphasis on benthic studies, to support nationwide efforts aimed at assessing and predicting changes in the quality of coastal ecosystems in relation to both human and natural influences. The program seeks to identify and find solutions to environmental problems associated with a variety of stressors that undermine the health and survival of valuable living coastal resources. This capability is intended to complement related coastal monitoring and forecasting activities within CCEHBR and other parts of NCCOS and to help provide NOAA with a sound scientific basis to achieve important national strategic goals such as sustaining healthy coastal ecosystems, building sustainable fisheries, and recovering protected species.



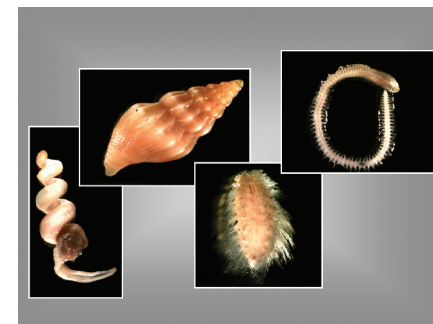
Coastal Ecology Program

Goals

- ❑ Develop indicators and other diagnostic tools for predicting biological responses to human-induced stressors in coastal ecosystems.
- ❑ Conduct baseline characterizations of ecological condition in strategic coastal areas (e.g., marine protected areas and other areas of special interest where such information is lacking).
- ❑ Conduct integrative ecological assessments, using multiple indicators, to assess patterns in environmental quality on local to national scales and to determine the extent to which biological impacts are related to natural versus anthropogenic stressors.
- ❑ Provide opportunities for field validation of environmental quality based on indicator predictions.
- ❑ Provide scientifically sound information to support ecosystem-based approaches to the management of coastal resources.
- ❑ Promote the use of related products from these efforts in coastal management decision making, scientific research, education, and public outreach through presentation of results in reports, publications, symposia, public meetings, Internet-based web sites, and other effective forums.
- ❑ Assist NOAA in demonstrating the benefits of performing science through partnerships and fulfilling its goal of creating a stronger regional focus for science, products, and services.

Research Capabilities

- ❑ Marine benthic ecology
- ❑ Ecological statistics
- ❑ Integrative ecological assessments
- ❑ Development of multi-metric benthic indices of biotic integrity and related ecological indicators for assessing and predicting impacts of human activities in coastal ecosystems
- ❑ Field sampling support for coastal monitoring and assessment studies.



Below are examples of recent significant accomplishments resulting from these efforts:

- ❑ First-ever environmental baseline on condition of benthic infauna and concentrations of contaminants in sediments and biota at Gray's Reef NMS off Georgia (Hyland et al. 2006). Data, which suggest that the sanctuary is in good health with low background levels of contaminants and diverse benthic assemblages, were used to help revise the Sanctuary Management Plan.
- ❑ Comprehensive region-wide assessment of ecological conditions of southeastern estuaries through implementation of EMAP in the Carolinian Province (Cape Henry, VA to St. Lucie Inlet, FL) (Hyland et al. 1998). Collaboration with EPA and States supported a goal of the National Coastal Monitoring Act for NOAA and EPA to conduct a coordinated National Coastal Monitoring Program.
- ❑ First-ever state-wide assessment of sediment quality of North Carolina estuaries (Hyland et al. 2000). Results support efforts by NC-DENR to develop a Comprehensive Environmental Management Plan for the Albemarle-Pamlico region, second largest estuary in the country.
- ❑ First-ever state-wide characterization of benthic communities of North Carolina estuaries and their patterns of biodiversity and abundance in relation to environmental controlling factors (Hyland et al. 2004).
- ❑ Development of a benthic index of biotic integrity for assessing health of benthic assemblages of southeastern estuaries (Van Dolah et al. 1999).
- ❑ Development of a predictive framework for assessing risks of benthic impacts within different ranges of sediment contamination. Bioeffect thresholds have been published for southeastern estuaries (Hyland et al. 1999) and for Atlantic and Gulf of Mexico estuaries overall (Hyland et al. 2003).

